APC
by Schneider Electric

Installation and Operation

Smart-UPS®

SUA1000-BR/SUA1500-BR
120 VAC

English

This manual and the safety guide are available in English on the enclosed CD and the APC Web site, www.apc.com.

Este manual e o guia de segurança estão disponíveis em português no CD incluso e no website da APC, www.apc.com.

Introduction

The APC® by Schneider Electric Smart-UPS® is a high performance uninterruptible power supply (UPS). It provides protection for electronic equipment from utility power blackouts, brownouts, sags, and surges; small utility fluctuations and large disturbances. The UPS also provides battery backup power until utility power returns to safe levels or the batteries are fully discharged.

1: INSTALLATION

Read the Safety Instruction sheet before installing the UPS.

Unpacking

Inspect the UPS upon receipt. APC designed robust packaging for your product. However, accidents and damage may occur during shipment. Notify the carrier and dealer if there is damage.

The packaging is recyclable; save it for reuse or dispose of it properly.

Check the package contents. The package contains the UPS, a literature kit containing one CD, one serial cable, one USB cable, product documentation and Safety Information.

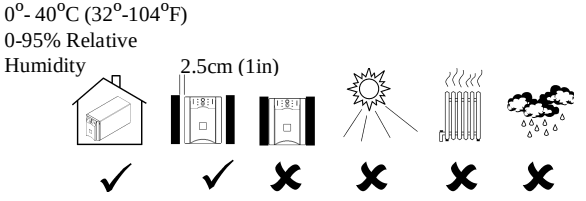
The UPS is shipped with the battery disconnected.

Positioning the UPS

The UPS is heavy. Select a location sturdy enough to handle the weight.

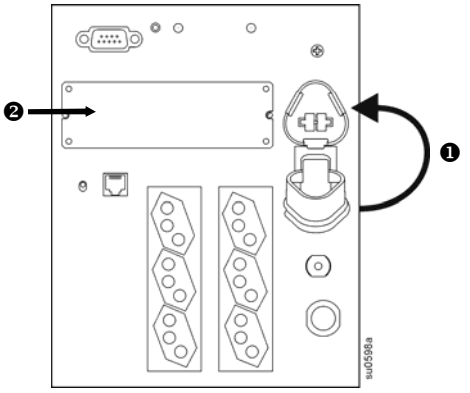
Do not operate the UPS where there is excessive dust or the temperature and humidity are outside the specified limits.

PLACEMENT



Connecting Equipment and Power to the UPS

SMART-UPS REAR PANEL



1. **Plug in the battery connector❶**.
2. Connect equipment to the UPS. **Note: Do not connect a laser printer to the UPS. A laser printer draws significantly more power than other types of equipment and may overload the UPS.**
3. Add any optional accessories to the SmartSlot❷.
4. Using the power cord, plug the UPS into a two-pole, three-wire, grounded receptacle only. Avoid using extension cords.
5. Turn on all connected equipment. To use the UPS as a master ON/OFF switch, be sure all connected equipment is switched ON. The equipment will not be powered until the UPS is turned on.
6. To power up the UPS press the Test button on the front panel.
   - The UPS charges its battery when it is connected to utility power. The battery charges to 90% capacity during the first three hours of normal operation. ***Do not*** expect full battery run capability during this initial charge period.
   - Check the site wiring fault LED located on the rear panel. It lights up if the UPS is plugged into an improperly wired utility power outlet. Refer to *Troubleshooting* in this manual.
7. For additional computer system security, install PowerChutePlus® UPS Power Management and Diagnostic Software.

BASIC CONNECTORS

Serial Port

USB Port

Power management software and interface kits can be used with the UPS. **Use only interface kits supplied or approved by APC.**

Use the APC supplied cable to connect to the Serial Port. DO NOT use a standard serial interface cable since it is incompatible with the UPS connector.

Both Serial and USB Ports are provided. They cannot be used simultaneously.

TVSS Screw

The UPS features a transient voltage surge-suppression (TVSS) screw for connecting the ground lead on surge suppression devices such as telephone and network line protectors.

When connecting grounding cable, disconnect the unit from the utility power outlet.

2: OPERATION

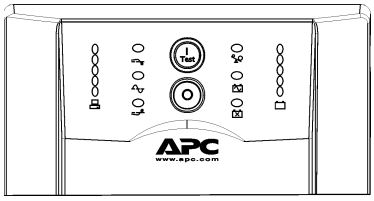
SMART-UPS FRONT PANEL

Power On

Power Off

Load

84%
67%
50%
33%
16%



Battery Charge

96%
72%
48%
24%
<24%

Online

The online LED illuminates when the UPS is supplying utility power to the connected equipment. If the LED is not lit, the UPS is either not turned ON, or is supplying battery power.

AVR Trim

This LED illuminates to indicate the UPS is compensating for a high utility voltage.

AVR Boost

This LED illuminates to indicate the UPS is compensating for a low utility voltage.

On Battery	When the *on battery power* LED is lit the UPS is supplying battery power to the connected equipment. When on battery, the UPS sounds an alarm—four beeps every 30 seconds.
Overload	The LED illuminates and the UPS emits a sustained alarm tone when an overload condition occurs.
Replace Battery	Failure of a battery self-test causes the UPS to emit short beeps for one minute and the *replace battery* LED illuminates. Refer to *Troubleshooting* in this manual.
Battery Disconnected	The *replace battery* LED flashes and short beep is emitted every two seconds to indicate the battery is disconnected.
Automatic Self-Test	The UPS performs a self-test automatically when turned on, and every two weeks thereafter (by default). During the self-test, the UPS briefly operates the connected equipment on battery. If the UPS fails the self-test, the *replace battery* LED lights and immediately returns to online operation. The connected equipment is not affected by a failed test. Recharge the battery for 24 hours and perform another self-test. If it fails, the battery must be replaced.
Manual Self-Test	Press and hold the button for a few seconds to initiate the self-test.

On Battery Operation

The Smart-UPS switches to battery operation automatically if the utility power fails. While running on battery, an alarm beeps four times every 30 seconds.

Press the button (front panel) to silence the UPS alarm (for the current alarm only. If the utility power does not return, the UPS continues to supply power to the connected equipment until the battery is exhausted.

If PowerChute is not being used you must manually save your files and power down before the UPS turns off.

DETERMINING ON BATTERY RUN TIME

UPS battery life differs based on usage and environment. It is recommended that the battery/batteries be changed once every three years. See the APC Web site, www.apc.com, for on battery run times.

3: USER CONFIGURABLE ITEMS

NOTE: SETTINGS ARE MADE THROUGH SUPPLIED POWERCHUTE SOFTWARE OR OPTIONAL SMART SLOT ACCESSORY CARDS.			
FUNCTION	***FACTORY DEFAULT***	***USER SELECTABLE CHOICES***	***DESCRIPTION***
Automatic Self-Test	Every 14 days (336 hours)	Every 7 days (168 hours), On Startup Only, No Self-Test	This function sets the interval at which the UPS will execute a self-test. Refer to your software manual for details.
UPS ID	UPS_IDEN	Up to eight characters to define the UPS	Use this field to uniquely identify the UPS, (ie. server name or location) for network management purposes.
Date of Last Battery Replacement	Manufacture Date	Date of Battery Replacement mm/dd/yy	Reset this date when you replace the battery module.
Minimum Capacity Before Return from Shutdown	0 percent	0, 15, 30, 45, 50, 60, 75, 90 percent	The UPS will charge its batteries to the specified percentage before return from a shutdown.
Voltage Sensitivity The UPS detects and reacts to line voltage distortions by transferring to battery operation to protect the connected equipment. Where power quality is poor, the UPS may frequently transfer to battery operation. If the connected equipment can operate normally under such conditions, reduce the sensitivity setting to conserve battery capacity and service life.	☼ high ☼ medium ● low	Brightly lit: UPS is set to *high* sensitivity (default). Dimly lit: UPS is set to *medium* sensitivity. Off: Low battery warning interval is about eight minutes.	To change the UPS sensitivity, press the *voltage sensitivity* button ⦿ (rear panel). Use a pointed object (such as a pen) to do so. You can change the sensitivity level through PowerChute software.
Alarm Control	Enable	Enable, Mute, Disable	User can mute an ongoing alarm or disable all existing alarms permanently.

NOTE: SETTINGS ARE MADE THROUGH SUPPLIED POWERCHUTE SOFTWARE OR OPTIONAL SMART SLOT ACCESSORY CARDS.			
FUNCTION	***FACTORY DEFAULT***	***USER SELECTABLE CHOICES***	***DESCRIPTION***
Shutdown Delay	90 seconds	0, 90, 180, 270, 360, 450, 540, 630 seconds	Sets the interval between the time when the UPS receives a shutdown command and actual shutdown.
Low Battery Warning. PowerChute interface software provides automatic, unattended shutdown when approximately two minutes (by default) of battery operated run time remains.	☼ 2 min. ☼ 5 min. ● 8 min.	*Brightly lit*: Low battery warning interval is about two minutes. *Dimly lit*: Low battery warning interval is about five minutes. *Off*: Low battery warning interval is about eight minutes. Possible interval settings: 2, 5, 8, 11, 14, 17, 20, 23 minutes.	The low battery warning beeps are continuous when two minutes of run time remain. To change the warning interval default setting, press the *voltage sensitivity* button (use a pointed object such as a pen to do so), while pressing and holding the (I Test) button (front panel).
Synchronized Turn-on Delay	0 seconds	0, 60, 120, 180, 240, 300, 360, 420 seconds	The UPS will wait the specified time after the return of utility power before turn-on (to avoid branch circuit overload).
High Transfer Point	127 VAC	127, 130, 133, 136 VAC	To avoid unnecessary battery usage, set the high transfer point higher if the utility voltage is chronically high and the connected equipment is known to work under this condition.
Low Transfer Point	106 VAC	97, 100, 103, 106 VAC	Set the low transfer point lower if the utility voltage is chronically low and the connected equipment can tolerate this condition.

4: STORAGE, MAINTENANCE, AND TRANSPORTING

Storage

Store the UPS covered and positioned as for proper functioning, in a cool, dry location, with the batteries fully charged.

At -15 to +30 °C (+5 to +86 °F), charge the UPS battery every six months.
At +30 to +45 °C (+86 to +113 °F), charge the UPS battery every three months.

Replacing the Battery Module

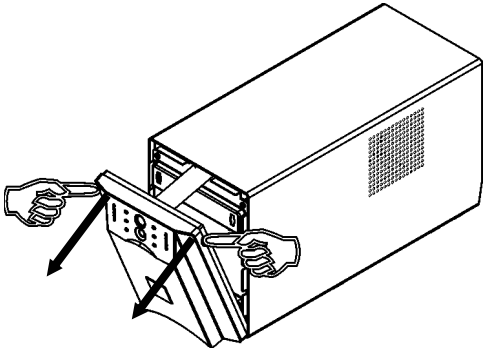
This UPS has an easy to replace, hot-swappable battery module. Replacement is a safe procedure, isolated from electrical hazards. You may leave the UPS and connected equipment on for this procedure. See your dealer or contact APC at the web site, www.apc.com/support for information on replacement battery modules.

Once the battery is disconnected, the connected equipment is not protected from power outages.

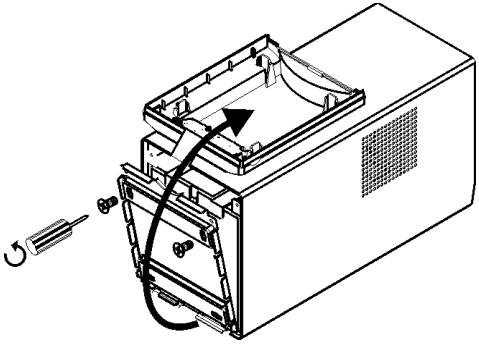
Be careful during the following steps-the battery module is heavy.

REMOVING THE FRONT BEZEL AND BATTERY MODULE

Step 1

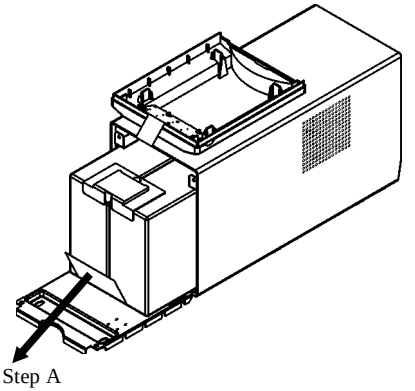


Step 2



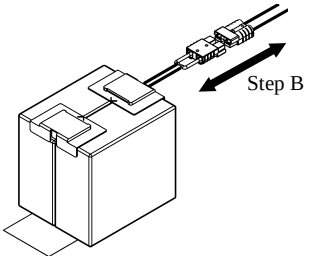
1500VA Model

Step 3



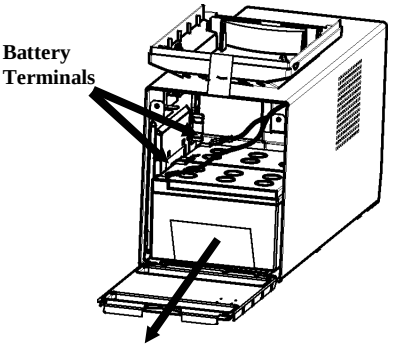
Pull the battery module out of the compartment until the back of the module is flush with the outer edges of the UPS.

Disconnect the battery connector.



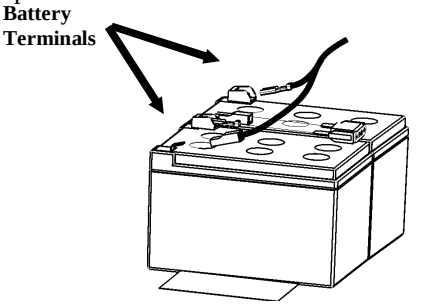
1000VA Model

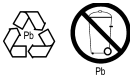
Step 3



Disconnect the battery cable terminals before removing the battery module from the UPS.

Note: The red cable connects to the red color-coded terminal; the black cable connects to the black color-coded terminal. This will be important during the battery replacement procedure.





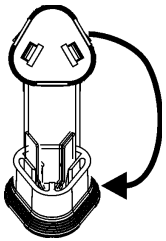
Be sure to deliver the spent battery to a recycling facility or ship it to APC in the replacement battery packing material.

REPLACING THE BATTERY MODULE

To replace the battery module, reverse the directions above for *Removing the Front Bezel and Battery Module*.

Disconnecting the Battery for Transport

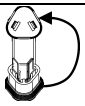
1. Shut down and disconnect any equipment attached to the UPS.
2. Shut down and disconnect the UPS from utility power.
3. Unplug the battery connector (rear panel).



4. Follow the shipping instructions outlined in the *Service* section of this manual.

5: TROUBLESHOOTING

Use the chart below to solve minor Smart-UPS installation and operation problems. Refer to the APC Web site, www.apc.com, for assistance with complex UPS problems.

PROBLEM AND POSSIBLE CAUSE	SOLUTION
UPS WILL NOT TURN ON	
Battery not connected properly.	Check that the battery connector (rear panel) is fully engaged. 
(Test) button not pushed.	Press the (Test) button once to power the UPS and the connected equipment.
UPS not connected to utility power supply.	Check that the power cable from the UPS to the utility power supply is securely connected at both ends.
Very low or no utility voltage.	Check the utility power supply to the UPS by plugging in a table lamp. If the light is very dim, have the utility voltage checked.
UPS WILL NOT TURN OFF	
Internal UPS fault.	Do not attempt to use the UPS. Unplug the UPS and have it serviced immediately.
UPS BEEPS OCCASIONALLY	
Normal UPS operation.	None. The UPS is protecting the connected equipment.
UPS DOES NOT PROVIDE EXPECTED BACKUP TIME	
The UPS battery is weak due to a recent outage or is near the end of its service life.	Charge the battery. Batteries require recharging after extended outages. They wear faster when put into service often or when operated at elevated temperatures. If the battery is near the end of its service life, consider replacing the battery even if the *replace battery* LED is not yet lit.
ALL LEDS ARE LIT AND THE UPS EMITS A CONSTANT BEEPING	
Internal UPS fault.	Do not attempt to use the UPS. Turn the UPS off and have it serviced immediately.
FRONT PANEL LEDS FLASH SEQUENTIALLY	
The UPS has been shut down remotely through software or an optional accessory card.	None. The UPS will restart automatically when utility power returns.
ALL LEDS ARE OFF AND THE UPS IS PLUGGED INTO A WALL OUTLET	
The UPS is shut down and the battery is discharged from an extended outage.	None. The UPS will return to normal operation when the power is restored and the battery has a sufficient charge.

Problem and Possible Cause	Solution
The overload LED is lit and the UPS emits a sustained alarm tone	
The UPS is overloaded.	The connected equipment exceeds the specified "maximum load" as defined in *Specifications* at the APC web site, www.apc.com. The alarm remains on until the overload is removed. Disconnect nonessential equipment from the UPS to eliminate the overload. The UPS continues to supply power as long as it is online and the circuit breaker does not trip; the UPS will not provide power from batteries in the event of a utility voltage interruption. If a continuous overload occurs while the UPS is on battery, the unit turns off output in order to protect the UPS from possible damage.
The* replace battery *LED is lit	
Replace Battery LED flashes and short beep is emitted every two seconds to indicate the battery is disconnected. Weak battery. Failure of a battery self-test.	Check that the battery connectors are fully engaged. Allow the battery to recharge for 24 hours. Then, perform a self-test. If the problem persists after recharging, replace the battery. The UPS emits short beeps for one minute and the *replace battery* LED illuminates. The UPS repeats the alarm every five hours. Perform the self-test procedure after the battery has charged for 24 hours to confirm the *replace battery* condition. The alarm stops and the LED clears if the battery passes the self-test.
The Site Wiring Fault LED is lit	
The site wiring LED is lit (rear panel). *120V models only.*	The UPS is plugged into an improperly wired utility power outlet. Wiring faults detected include missing ground, hot-neutral polarity reversal, and overloaded neutral circuit. Contact a qualified electrician to correct the building wiring.
The Input Circuit Breaker trips	
The plunger on the circuit breaker (located above the input cable connection) pops out.	Reduce the load on the UPS by unplugging equipment and press the plunger in.
AVR Boost or AVR Trim LEDs light	
AVR Boost or Trim LEDs light Your system is experiencing excessive periods of low r high voltage.	Have qualified service personnel check your facility for electrical problems. If the problem continues, contact the utility company for further assistance.

Problem and Possible Cause	*Solution*
UTILITY CIRCUIT BREAKER TRIPS	
Utility circuit breaker trips during normal operation.	Reduce the load on the UPS by unplugging equipment and resetting the circuit breaker (on the back of UPS) by pressing the plunger in.
UPS OPERATES ON BATTERY ALTHOUGH NORMAL LINE VOLTAGE EXISTS	
UPS input circuit breaker tripped. Very high, low, or distorted line voltage. Inexpensive fuel powered generators can distort the voltage.	Reduce the load on the UPS by unplugging equipment and resetting the circuit breaker (on the back of UPS) by pressing the plunger in. Move the UPS to a different outlet on a different circuit. Test the input voltage with the utility voltage display (see below). If acceptable to the connected equipment, reduce the UPS sensitivity.
BATTERY CHARGE AND BATTERY LOAD LEDS FLASH SIMULTANEOUSLY	
UPS has shutdown. The internal temperature of the UPS has exceeded the allowable threshold for safe operation.	Check that the room temperature is within the specified limits for operation. Check that the UPS is properly installed allowing for adequate ventilation. Allow the UPS to cool down. Restart the UPS. If the problem continues contact APC at, www.apc.com/supoport.
DIAGNOSTIC UTILITY VOLTAGE FEATURE	
Utility Voltage 120V 133 123 115 105 98 Battery Charge	The UPS has a diagnostic feature that displays the utility voltage. Plug the UPS into the normal utility power. Press and hold the Test button to view the utility voltage bar graph display. After a few seconds the five-LED, Battery Charge display on the right of the front panel shows the utility input voltage. Refer to the figure at left for the voltage reading (values are not listed on the UPS). The display indicates the voltage is between the displayed value on the list and the next higher value. Three LEDs light, indicating utility voltage within the normal range. If no LEDs are lit and the UPS is plugged into a working utility power outlet, the line voltage is extremely low. If all five LEDs are lit, the line voltage is extremely high and should be checked by an electrician.
⚠	The UPS starts a self-test as part of this procedure. The self-test does not affect the voltage display.

Service

If the unit requires service, do not return it to the dealer. Follow these steps:

1. Review the *Troubleshooting* section of the manual to eliminate common problems.
2. If the problem persists, contact APC Customer Support through the APC Web site, **www.apc.com**.
   a. Note the model number and serial number and the date of purchase. The serial number is located on the rear panel of the unit and is available through the LCD display on select models.
   b. Call APC Customer Support and a technician will attempt to solve the problem over the phone. If this is not possible, the technician will issue a Returned Material Authorization Number (RMA#).
   c. If the unit is under warranty, the repairs are free.
   d. Service procedures and returns may vary internationally. Refer to the APC Web site for country specific instructions.
3. Pack the unit in its original packaging. If this is not available, refer to **www.apc.com** to obtain a new set.
   a. Pack the unit properly to avoid damage in transit. Never use foam beads for packaging. Damage sustained in transit is not covered under warranty.
   b. **For the UPS, always DISCONNECT THE BATTERY before shipping in compliance with U.S. Department of Transportation (DOT) and IATA regulations.** The battery may remain in the unit.
   c. Internal batteries may remain connected in the XLBP during shipment, (if applicable, not all units have XLBPs).
4. Write the RMA# provided by Customer Support on the outside of the package.
5. Return the unit by insured, pre-paid carrier to the address provided by Customer Support.

APC Worldwide Customer Support

Refer to **www.apc.com** (Corporate Headquarters)
Connect to localized APC Web sites for specific countries, each of which provides customer support information.

Contact the APC Customer Support Center by telephone or e-mail.

Telephone: Global (888) 272 2782
Brazil (11) 4689 8600

6: RADIO FREQUENCY WARNINGS AND WARRANTY

This device complies with FCC Part 15 Class A requirements. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

Limited Warranty

The limited warranty provided by American Power Conversion (APC®) in this Statement of Limited Factory Warranty applies only to Products you purchase for your commercial or industrial use in the ordinary course of your business.

Terms of Warranty

APC warrants its products to be free from defects in materials and workmanship for a period of two years from the date of purchase. The APC obligation under this warranty is limited to repairing or replacing, at its sole discretion, any such defective products. This warranty does not apply to equipment that has been damaged by accident, negligence or misapplication or has been altered or modified in any way. Repair or replacement of a defective product or part thereof does not extend the original warranty period. Any parts furnished under this warranty may be new or factory remanufactured.

Non-transferable Warranty

This warranty applies only to the original purchaser who must have properly registered the product. Product may be registered at www.apc.warranty.com.

Exclusions

APC shall not be liable under the warranty if its testing and examination disclose that the alleged defect in the product does not exist or was caused by end user or any third person misuse, negligence, improper installation or testing. Further APC shall not be liable under the warranty for unauthorized attempts to repair or modify wrong or inadequate electrical voltage or connection, inappropriate on-site operation conditions, corrosive atmosphere, repair, installation, start-up by non-APC designated personnel, a change in location or operating use, exposure to the elements, Acts of God, fire, theft, or installation contrary to APC recommendations or specifications or in any event if the APC serial number has been altered, defaced, or removed, or any other cause beyond the range of the intended use.

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NO SALESMAN, EMPLOYEE OR AGENT OF APC IS AUTHORIZED TO ADD TO OR VARY THE TERMS OF THIS WARRANTY. WARRANTY TERMS MAY BE MODIFIED, IF AT ALL, ONLY IN WRITING SIGNED BY AN APC OFFICER AND LEGAL DEPARTMENT.

Warranty Claims

Customers with warranty claims issues may access the APC worldwide customer support network by referring to the APC Web site, www.apc.com . Select your country from the country selection pull-down menu. Open the Support tab at the top of the web page to obtain contact information for customer support in your region.

[1] To determine which factory warranty applies to the APC product you purchased, consult the factory warranties located on the APC Web site, www.apc.com/products.

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